

## CLAIMS

1. An ultrasonic probe having:

5 a piezoelectric element for transmitting  
and receiving ultrasonic waves;

a backing load member placed on a rear surface  
of said piezoelectric element; and

10 a heat conduction material which is placed  
inside said backing load member or a part thereof and  
whose thermal conductivity is greater than a thermal  
conductivity of said backing load member.

2. An ultrasonic probe having:

15 a plurality of piezoelectric elements,  
which are arrayed in one direction, for transmitting and  
receiving ultrasonic waves;

a backing load member placed on rear surfaces of  
said plurality of piezoelectric elements; and

20 one or more sheet-shaped heat conduction  
materials which are placed in parallel along an array  
direction of said piezoelectric elements and a depth  
direction inside said backing load member and whose  
thermal conductivities are greater than a thermal  
conductivity of said backing load member.

3. The ultrasonic probe according to claim 1 or 2,  
characterized in that an end portion of said  
piezoelectric element side of said heat conduction  
material has the shape inclined to a surface of said  
5 backing load member side of said piezoelectric element.

4. The ultrasonic probe according to claim 3,  
wherein an angle between an inclination plane of the end  
portion on said piezoelectric element side of said heat  
10 conduction material and a direction vertical to the rear  
side of said piezoelectric element is 40 degrees or less  
or an angle where a critical angle of the ultrasonic  
waves is subtracted from 90 degrees.

15 5. The ultrasonic probe according to claim 1,  
wherein a heat radiating block which is connected to  
said heat conduction material and whose thermal  
conductivity is greater than the thermal conductivity of  
said backing load member.

20 6. The ultrasonic probe according to claim 5,  
wherein said heat radiating block is placed on the rear  
surface of said backing load member and wherein said  
heat conduction material is further placed between said  
25 heat radiating block and said backing load member.

7. An ultrasonic probe including:

a plurality of piezoelectric elements which are divided by division grooves in one direction and  
5 transmit and receive ultrasonic waves;

a backing load member placed on rear surfaces of said plurality of piezoelectric elements; and

block-shaped heat conduction materials which are placed on a rear surface of said backing load member and  
10 are greater than a thermal conductivity of said backing load member,

wherein said division grooves are formed on said backing load member at depths where they do not reach said heat conduction materials.

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8. An ultrasonic probe including:

a plurality of piezoelectric elements which are divided by division grooves in one direction and  
transmit and receive ultrasonic waves;

20 a backing load member placed on rear surfaces of said plurality of piezoelectric elements; and

block-shaped heat conduction materials which are placed on a rear surface of said backing load member and  
are greater than a thermal conductivity of said backing  
25 load member,

wherein said division grooves are formed at depths where they reach said heat conduction materials and wherein said backing load member is formed on a concave and convex surface formed on surfaces of said 5 heat conduction materials through said division grooves.

9. The ultrasonic probe according to any one of preceding claims 1, 7 and 8, wherein as said heat conduction material, any material of PGS graphite sheet 10 with high degree of orientation where polymeric film is graphitized, graphite, carbon nano-tube, aluminum nitride, boron nitride, silicon carbide, beryllium oxide, copper and aluminum is used.